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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/606,941 | 06/26/2003 | Guodong Zhan | 02307Z-137500US | 4434 |

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| EXAMINER | |
|---|---|
| DUONG, THO V | |
| **ART UNIT** | **PAPER NUMBER** |
| 3743 | |

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/606,941 | ZHAN ET AL. | |
| | Examiner | Art Unit | |
| | Tho v Duong | 3743 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *20 September 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *17-31* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 June 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

Receipt of applicant response filed 9/20/2004 is acknowledged. Claims 1-31 are pending. Claims 17-31 remain withdrawn from further consideration.

### *Election/Restrictions*

Applicants affirm the election of group I, claims 1-16 with traverse, filed 9/20/2004 is acknowledged. Since there lacks of arguments on the ground of the traversal, the requirement is still deemed proper and is therefore made FINAL.

### *Drawings*

Applicant's argument that Figures 1 and 2 are data presentation rather than drawing of the invention, so that they can not show the features specified in claims, has been very carefully considered but is not deemed to be found persuasive since the objection is to the drawing not to any specific figures. According to 37 CFR 1.83(a), the drawings must show every feature of the invention specified in the claims. The objection to the drawing remains proper and is hereby repeated.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the claimed subject matter of "the improvement comprising interposing between said exothermic device...in a direction transverse to said heat sink surface" and "a microprocessor" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet,

even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Response to Arguments***

In view of applicant' Remark about claim rejection –35 USC 112, it is now clear of what applicant is claiming. Therefore, the 35 USC 112 rejection against claims 1-16 has been withdrawn.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the carbon nanotubes to become oriented in the direction parallel to the heat sink surface or the carbon nanotubes are merely planar or flatten out) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this case, applicant recites only in the claim that the composite having been uniaxially compressed in a direction transverse to the heat sink surface. It is clearly disclosed in figure 1 of Eckblad that

the composite material (5) being pressed down by the heat sink in a direction (downwardly) transverse to the heat sink surface. Therefore, the 103 rejection against claims 1-16 remain proper and is hereby repeated.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al. (US 6,420,293) in view of Eckblad et al. (US 6,407,922). Chang discloses (column 1, line 10, column 2, line 33 and table 1) an improved ceramic composite material that has carbon nanotubes dispersed in a matrix of a ceramic material of less than 500 nm in diameter such as alumina; the nanotubes can be both single-wall carbon nanotubes or multi-wall carbon nanotubes; the mixture has a density of at least a relative of up to 99.8% of theoretical density; the carbon nanotubes constitute from about 0.5-50 4 of the mixture by volume. Chang does not disclose that the mixture material is disposed between a heat source and a heat sink. Ekcblad discloses (figure 1 and column 3, lines 11-52) a heat dissipating device that has a heat sink (7), a microprocessor (3), a composite material (5) being disposed there between and being uniaxially compressed in a direction transverse to the heat sink surface (at least by the weight of the heat sink on the composite material; Ekcblad further discloses that the application of carbon nanotubes an and its matrix in the heat dissipating device is for the purpose of increasing the fracture toughness of the thermal interface material and enhancing the heat conductivity of the

thermal interface material along the long axis to conduct heat in one direction from the microprocessor (3) to the heat sink (7). Since Chang and Eckblad are both from the same field of studying about the property and application of carbon nanotubes, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use Ekcblad's teaching in Chang to use the mixture of carbon nanotubes in heat dissipation application for the purpose of increasing the fracture toughness of the thermal interface material and enhancing the heat conductivity of the thermal interface material along the long axis to conduct heat in one direction from the microprocessor to the heat sink. As regarding claims 2, 14 and 15, the method of forming the device is not germane to the issue of patentability of the device itself. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). In this case the composite material as claimed is the same as or obvious from the composite of the prior art. Therefore, the claims are unpatentable over the prior art.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Tobita et al. (US 6,794,035) discloses a graphitized carbon fiber powder mixed with a ceramic matrix.

Tobita et al. (US 2003/0096104A1) discloses carbon nanotube complex molded body.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho v Duong whose telephone number is 571-272-4793. The examiner can normally be reached on M-F (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Henry Bennet can be reached on 571-272-4791. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tho v Duong
Examiner
Art Unit 3743

TD
January 6, 2005